LISTING OF THE CLAIMS

1. (Previously presented) A modified glycosaminoglycan comprising a glycosaminoglycan in which at least one hydroxyl group present in the molecular structure of the glycosaminoglycan has been chemically modified so that oxygen atom of the hydroxyl group is covalently bound to a hydrazide-reactive group or an aminooxy-reactive group instead of a hydrogen atom.

2. (Previously presented) The modified glycosaminoglycan of claim 1, wherein the glycosaminoglycan comprises chondroitin, chondroitin sulfate, dermatan, dermatan sulfate, heparin, or heparan sulfate.

3. (Previously presented) The modified glycosaminoglycan of claim 1, wherein the glycosaminoglycan comprises hyaluronan.

4. (Previously presented) The modified glycosaminoglycan of claim 3, wherein the at least one hydroxyl group is a primary C-6 hydroxyl group contained within an N-acetyl-glucosamine residue present in the molecular structure of the hyaluronan.

5. (Previously presented) The modified glycosaminoglycan of claim 4, wherein at least one secondary hydroxyl group present in the molecular structure of the hyaluronan has also been modified so that the oxygen atom of the secondary hydroxyl group is covalently bound to the hydrazide-reactive group or the aminooxy-reactive group.

6. (Previously presented) The modified glycosaminoglycan of claim 4, wherein up to 100 % of the primary C-6 hydroxyl groups of the N-acetyl-glucosamine residues in the

glycosaminoglycan structure are chemically modified so that the hydrogen atom of each hydroxyl group is replaced with the hydrazide-reactive group or the aminooxy-reactive group.

7. (Previously presented) The modified glycosaminoglycan of claim 1, wherein the at least one hydroxyl group is a primary C-6 hydroxyl group contained within the non-uronic acid sugar component of the repeating disaccharide of the glycosaminoglycan.

8. (Previously presented) The modified glycosaminoglycan of claim 1, wherein the hydrazide-reactive group or the aminooxy-reactive group is selected from carboxyl, a carboxylate salt, and a carboxylic acid ester.

9. (Previously presented) The modified glycosaminoglycan of claim 1, wherein the hydrazide-reactive group or the aminooxy-reactive group has the formula -L-CO_2H or is a salt or ester thereof, wherein L comprises an unsubstituted hydrocarbyl group, an unsubstituted heterohydrocarbyl group, a substituted hydrocarbyl group, and a substituted heterohydrocarbyl group.

10. (Previously presented) The modified glycosaminoglycan of claim 9, wherein L comprises a polyalkylene group having the formula $(CH_2)_n$ wherein n is from 1 to 10.

Claims 11-13: (Canceled)

14. (Previously presented) A method for making a modified glycosaminoglycan, comprising (a) reacting a glycosaminoglycan with a base to produce a deprotonated glycosaminoglycan, and (b) reacting the deprotonated glycosaminoglycan with a compound containing at least one hydrazide-reactive group or aminooxy-reactive group.

Claims 15-23: (Canceled)

24. (Previously presented) A modified glycosaminoglycan made by the process of claim 14.

25. (Previously presented) The modified glycosaminoglycan of claim 24, comprising two or more hydrazide groups.

Claims 26-44: (Canceled)

45. (Previously presented) The method of claim 14, further comprising, after step (b), reacting the modified glycosaminoglycan with a hydrazide compound, to provide a further modified glycosaminoglycan.

46. (Previously presented) The method of claim 14, further comprising, after step (b), reacting the modified glycosaminoglycan with an aminooxy ether compound, to provide a further modified glycosaminoglycan.

47. (Previously presented) The further modified glycosaminoglycans produced by the methods of claims 45 or 46.

Claim 48: (Canceled)

49. (Previously presented) The compound of claim 232 wherein the macromolecule comprises an oligonucleotide, a nucleic acid or a metabolically stabilized analogue

thereof, a polypeptide, a lipid, a glycoprotein, a glycolipid, or a pharmaceutically-acceptable compound.

50. (Previously presented) The compound of claim 231, wherein the macromolecule comprises a polysaccharide, a protein, or a synthetic polymer.

51. (Previously presented) The compound of claim 50, wherein the macromolecule comprises a sulfated glycosaminoglycan.

52. (Previously presented) The compound of claim 231, wherein the macromolecule comprises chondroitin, chondroitin sulfate, dermatan, dermatan sulfate, heparin, heparan sulfate, alginic acid, pectin, or carboxymethylcellulose.

53. (Previously presented) The compound of claim 231, wherein the macromolecule comprises hyaluronan.

54. (Previously presented) The compound of claim 231 wherein Z comprises a polyether.

55. (Previously presented) The compound of claim 231 wherein R^1, R^2, R^5, R^6, R^7, and R^8 are hydrogen.

Claims 56-60: (Canceled)

61. (Previously presented) A method for producing a crosslinked glycosaminoglycan, comprising reacting the compound of any of claim 25 with a polycarbonyl crosslinker.

Claims 62-198: (Canceled)

199. (Previously presented) A pharmaceutical composition comprising a bioactive agent and a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group, or a crosslinked such modified glycosaminoglycan.

200. (Previously presented) A pharmaceutical composition comprising a living cell and a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group, or a crosslinked such modified glycosaminoglycan.

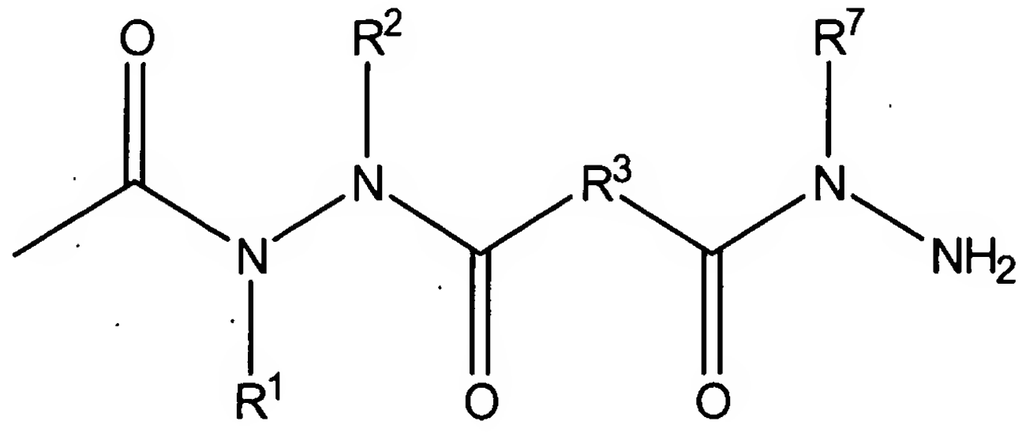
201. (Previously presented) A method for improving wound healing in a subject in need of such improvement, comprising contacting the wound of the subject with a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group, or a crosslinked such modified glycosaminoglycan.

202. (Previously presented) A method for delivering at least one bioactive agent to a patient in need of such delivery, comprising contacting at least one tissue capable of receiving the bioactive compound with the composition of claim 199.

203. (Previously presented) A method for delivering living cells to a patient in need of such delivery, comprising contacting at least one tissue capable of receiving the living cells with the composition of claim 200.

Claims 204-223: (Canceled)

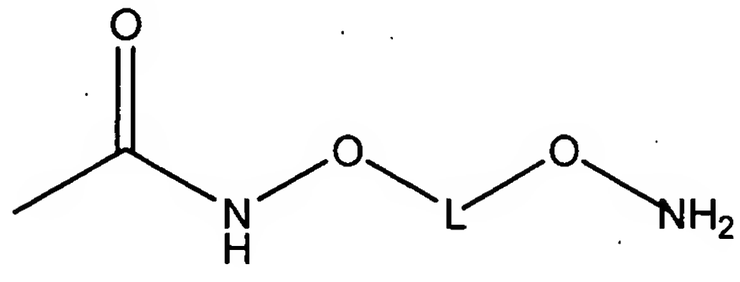
224. (Previously presented) The modified glycosaminoglycan of claim 1 or claim 24, containing at least one substituent having the structure of formula (I)



wherein

R', R^2, and R^7 are independently selected from hydrogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl, and R^3 is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl.

225. (Previously presented) The modified glycosaminoglycan of claim 1 or claim 24, containing at least one substituent having the structure of formula (II)

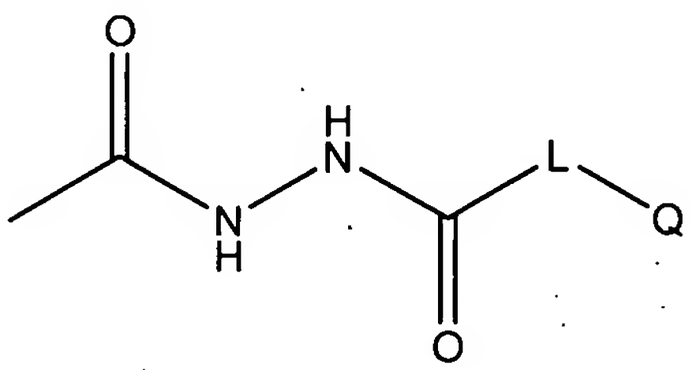


wherein

L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl.

226. (Previously presented) The modified glycosaminoglycan of claim 225, wherein L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof.

227. (Previously presented) The modified glycosaminoglycan of claim 1 or claim 24, containing at least one substituent having the structure of formula (III)



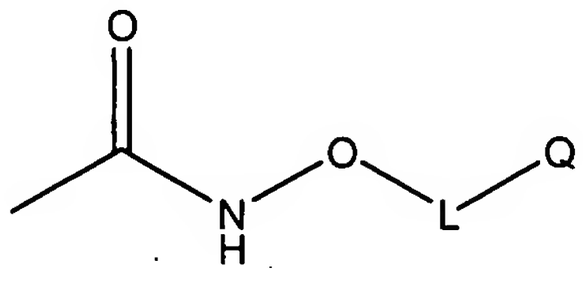
wherein:

L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl; and

Q is a bioactive agent, an SH group, or a thiol-reactive electrophilic functional group.

228. (Previously presented) The modified glycosaminoglycan of claim 227, wherein L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof.

229. (Previously presented) The modified glycosaminoglycan of claim 1 or claim 24, containing at least one substituent having the structure of formula (IV)

(IV) 

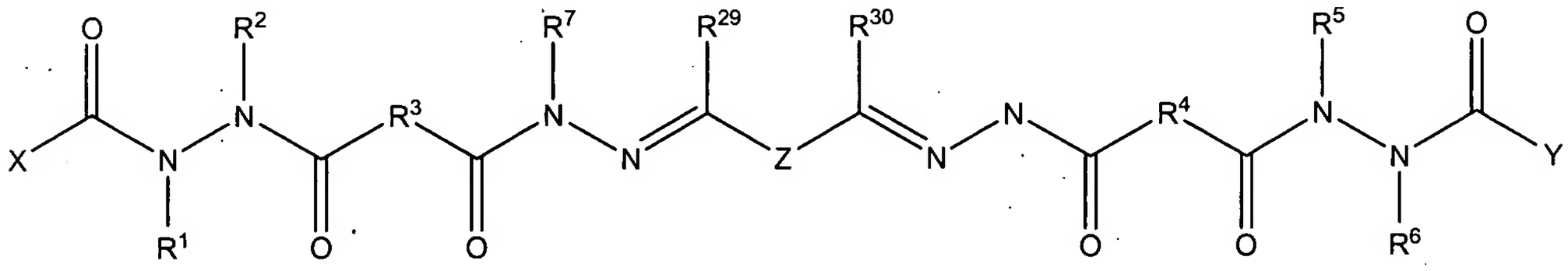
wherein:

L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl; and

Q is a bioactive agent, an aminooxy group, an SH group, or a thiol-reactive electrophilic functional group.

230. (Previously presented) The modified glycosaminoglycan of claim 229, wherein L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof.

231. (Previously presented) A compound having the structure of formula (V)



wherein:

X is a macromolecule;

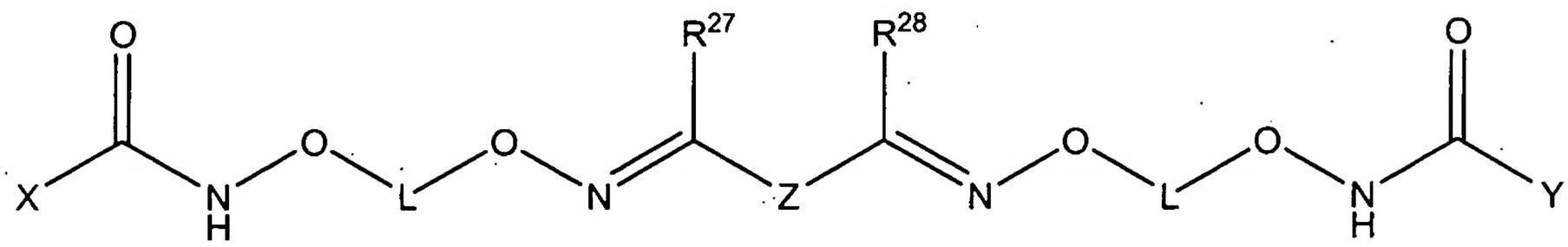
Y is a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group;

R^{29} and R^{30} are independently selected from hydrogen and lower alkyl;

R^1, R^2, R^5 , R^6, R^7, and R^8 are independently selected from hydrogen, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl; and

Z, R^3, and R^4 are independently selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl.

232. (Previously presented) A compound having the structure of formula (VI)

(VI) 

wherein:

X and Y are macromolecules;

R^{27} and R^{28} are independently selected from hydrogen and lower alkyl;

L and Z are independently selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl.

233. (Previously presented) The compound of claim 232, wherein L and Z are independently selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof.

234. (Previously presented) A compound comprising at least one fragment having the structure Y-S-S-G, wherein Y is a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group, and G comprises a residue of a thiolated compound.

235. (Previously presented) A compound comprising at least one fragment having the structure Y-(CO)-NH-NH-(CO)-L-S-S-G, wherein:

L is selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl, and substituted heterohydrocarbyl;

Y is a modified glycosaminoglycan in which at least one hydroxyl group has been modified so as to replace the hydrogen atom of the group with a hydrazide-reactive group or an aminooxy-reactive group; and

G comprises a residue of a thiolated compound.

236. (Previously presented) The compound of claim 235, wherein L is selected from polyether, polyamide, polyimino, aryl, polyester, polythioether, polysaccharyl, and combinations thereof.

237. (New) Use of the modified glycosaminoglycan of claim 1 to prevent adhesion after a surgical procedure.

238. (New) The use of claim 237, wherein the surgical procedure comprises cardiosurgery and articular surgery, abdominal surgery, a surgical procedure performed in the urogenital region, a surgical procedure involving a tendon, laparascopic surgery, pelvic surgery, oncological surgery, sinus and craniofacial surgery, ENT surgery, or a procedure involving spinal dura repair.

239. (New) Use of the modified glycosaminoglycan of claim 1 to support the growth of primary cells or immortalized cells.

240. (New) Use of the modified glycosaminoglycan of claim 1 to support the growth of tumor cells, fibroblasts, chondrocytes, stem cells, epithelial cells, neural cells, cells derived from the liver, endothelial cells, cardiac cells, muscle cells, or osteoblasts.

241. (New) Use of the modified glycosaminoglycan of claim 1 for bone or cartilage repair.

242. (New) An article coated with the modified glycosaminoglycan of claim 1.

243. (New) The article of claim 242, wherein the article is a suture, a clap, stent, a prosthesis, a catheter, a metal screw, a bone plate, a pin or a bandage.

244. (New) Use of the modified glycosaminoglycan of claim 1 as a 3-D cell culture.

245. (New) The use of claim 244, wherein the cell culture is used to determine the toxicity of a drug.

246. (New) A cell culture produced by the modified glycosaminoglycan of claim 1.